

# NASA Offers Nondestructive Evaluation Expertise to Industry

Partner with NASA Langley to improve your inspection program or products.

## Benefits

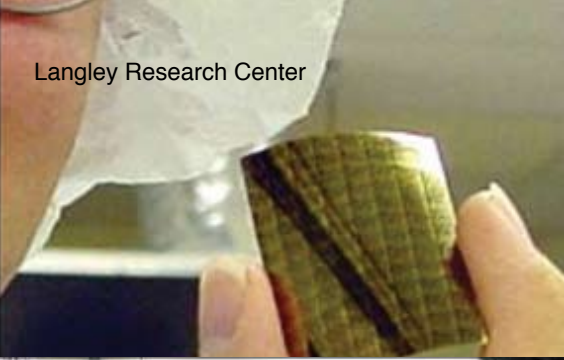
Langley's NDE technologies and expertise offer many benefits:

- Assessment of subsurface features at the nanoscale level
- Real-time distributed sensing of strain, temperature, pressure, and chemical presence
- High sensor counts (hundreds) with high spatial resolution
- Elimination of digital signal processing (DSP) overhead
- Integrated and embedded sensing
- Wireless damage and tamper detection
- Identification of
  - damage location
  - high-resolution, 3-D information
- Liquid penetrant inspection for small or complex geometries and rough surfaces

NASA Langley Research Center is a national leader in nondestructive evaluation (NDE) of both materials systems and complex aerospace vehicles. Building on their expertise in sensors and detectors, Langley researchers have identified innovative methods for ensuring the structural integrity of materials. This research has affected the safety and performance of vehicles and structures for NASA, military, and industry applications.

Using top-notch facilities and experienced engineers, Langley can partner with your organization in joint research to help meet your NDE needs—by solving a problem, creating a new product, or simply improving internal processes. Organizations can also leverage Langley's research by licensing our innovative NDE technologies.

For example, Langley developed an interferometric fiber-optic Bragg grating sensor to enable real-time monitoring of structural and environmental conditions for vehicle health monitoring (LAR-17300). This versatile technique offers broad utility in applications where high sensor counts and real-time monitoring of physical parameters are required. Other representative NDE technologies currently available include resonant difference-frequency atomic force ultrasonic microscopy (RDF-AFUM) for characterizing nanomaterials at the surface and subsurface levels (LAR-17440) and a wireless inductor-capacitor sensor system (LAR-17444, LAR-16970, LAR-17295).



Leverage Langley's NDE research for NASA's space program to the benefit of your organization. License a technology from us or engage us in a joint development agreement. Langley engineers are experienced in working with licensees to infuse technologies into their organizations by conducting additional research and development, modifying the technology for specific applications, and testing and validating. Langley can support your technology development from the laboratory to large-scale production.

## Applications

Langley's innovative research in NDE has led to patented technologies that offer wide-ranging market applications, including:

### Aerospace

- Functional nanocomposites for structures
- Vehicle health monitoring (e.g., wing, fuselage)

### Biomedical

- Verification of drug delivery to tissue targets and infusion of tissue with nanoparticles
- Real-time tactical feedback systems

### Civil transportation

- Structural health monitoring (e.g., bridges, buildings)
- Composite vehicle structures

### Industrial

- Multi-parameter physical sensing and health monitoring
- Damage detection of multilayer materials
- Puncture detection in hazmat suits or other protective clothing
- Real-time discontinuity identification using terahertz imaging

### Sensors/actuators

- Characterization of embedded nanoparticles

### Oil and gas industry

- Down-well sensing, structural monitoring

## For More Information

If your company is interested in licensing or joint development opportunities associated with this technology, or if you would like additional information on partnering with NASA, please contact:

The Technology Gateway

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